

FORMULATION AND EVALUATION OF HERBAL FACE CREAM

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Abstract—The present study was point out with the object of preparing the Herbal face cream that improves the skin moisture, emollient and nourishment for the skin. Herbal face cream was formulated with the aqueous extract of *Crocus sativus* and Aloe vera gel that are commonly used for the skin nourishment and emollient. The main challenge lies in the selection of natural material which can be rationally justified and comparable to that of synthetic material.

Herbal creams, gels, and ointments are commonly used for significant semisolid herbal formulations in topical dose therapy. Accordingly, semisolid bases are combined with extracts and isolated phyto compounds from medicinal plants to formulate a topical preparation that can treat skin problems. However, the anti-inflammatory properties of medicinal plants stand as an essential stage in the process of creating herbal medicines. Formulations for herbal medicines that use locally available medicinal plants are now widespread in nations like China and India. These reports directed us to further formulate and develop a herbal multipurpose cream serving its antimicrobial and anti-inflammatory activity.

Herbal medication products have been utilized for centuries as a primary form of healthcare in many cultures worldwide. Derived from plants and plant-derived materials, these products offer a rich source of bioactive compounds with potential therapeutic benefits. The use of herbal medicines spans diverse traditional systems, such as traditional Chinese medicine, ayurveda, and indigenous healing practices. This traditional knowledge has been passed down through generations, offering valuable insights into the healing properties of various plant species. Herbal medication products have demonstrated therapeutic potential across various health conditions, including digestive disorders, respiratory ailments, chronic pain, and immune system support. Their bioactive constituents, such as alkaloids, flavonoids, terpenes, and polyphenols, can interact with biological systems, offering potential therapeutic benefits.

Index Terms—Herbal medication products, Healthcare, aloe vera

I. Introduction

Cream is defined as semisolid emulsions which are oil in water (o/w) or water in oil (w/o) type and these semisolid emulsions are intended for external application [1]. Cream is classified as oil in water and water in oil emulsion. It is applied on outer part or superficial part of the skin and its main ability is to remain for a longer period of time at the site of application. The function of a skin cream is to protect the skin against different environmental condition, weather and gives soothing effect to the skin. There are different types of creams like cleansing, cold, foundation, vanishing, night, massage, hand and body creams. The main aim of our work is to develop a herbal cream which can give multipurpose effect, like moisturizer, reduce acne, and skin irritation, reduce skin diseases like eczema, psoriasis, dry skin, wrinkles, rashes etc. and also adding glow to the face. We have used three herbal ingredients in our preparation which are Aloe

Vera gel, Neem, Tulsi. Aloe Vera gel is used as a moisturizer, to reduce pimples and acne and also used for treatment of burn wounds [2,3]. Neem is used as an antifungal and anti-inflammatory and it is also used to reduce scar, pigmentation, redness and itching of the skin[1,4] Tulsi is used to add glow to the skin and to promote wound healing [5].

Human skin is the largest organ of human body, covering a surface area between 1.5 and 2.0 m² Therefore, human skin is considered the most accessible organ and it represents a promising route for drug delivery [6] Since decades, transdermal route of administration is regarded an attractive

General

1)Skin:

The skin is the body's largest organ, made of water, protein, fats and minerals. The skin protects body from germs and regulates body temperature. Nerves in the skin help feel sensations like hot and cold (1).

The skin also:

- 1 Regulates body temperature
- 2 Stores water and fat
- 3 Is a sensory organ
- 4 Prevents water loss
- 5 Prevents entry of bacteria
- 6 Acts as a barrier between the organism and its environment
- 7 Helps to make vitamin D when exposed to the sun

Skin takes on different thickness, color, and texture all over body. For example, head contains more hair follicles than anywhere else. But the soles of feet have none. In addition, the soles of feet and the palms of hands are much thicker than skin on other areas of body.

2)Layers of Skin

The skin is made up of 3 layers. Each layer has certain functions:

Epidermis

Dermis

Subcutaneous fat layer(hypodermis)

<p>Epidermis</p>	<p>The epidermis is the thin outer layer of the skin. It consists of 3 types of cells:</p> <p>Squamous cells: The outermost layer is continuously shed is called the stratum corneum.</p> <p>Basal cell: Basal cells are found just under the squamous cells, attach base of the epidermis.</p> <p>Melanocytes: Melanocytes are also found at the base of the epidermis and make melanin. This gives the skin its color.</p>
<p>Dermis</p>	<p>The dermis is the middle layer of the skin. The dermis contains the following:</p> <p>Blood vessels</p> <p>Lymph vessels</p> <p>Hair follicles</p> <p>Sweat glands</p> <p>Collagen bundles</p> <p>Fibroblasts</p> <p>Nerves Sebaceous</p> <p>Glands</p> <p>The dermis is held together by a protein called collagen. This layer gives skin flexibility and strength. The dermis also contains pain and touch receptors.</p>
<p>Subcutaneous fat layer</p>	<p>The subcutaneous fat layer is the deepest layer of skin. It consists of a network of collagen and fat cells. It helps conserve the body's heat and protects the body from injury by acting as a shock absorber.</p>

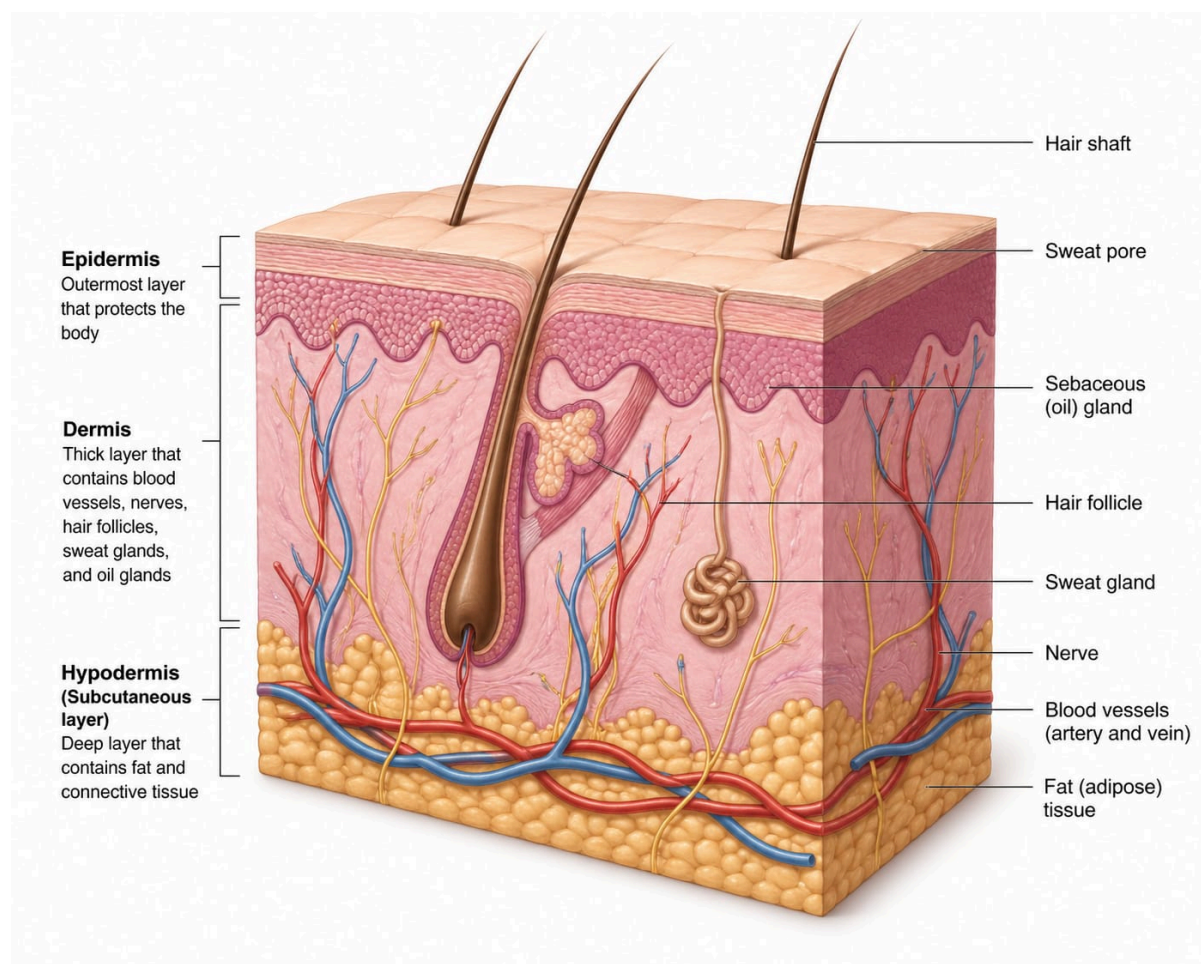


Figure no.1 Structure Of Skin

The concept of beauty and cosmetics dates back to ancient mankind and civilization. Generally herbal cosmetics are also referred to as natural cosmetics. Herbal cosmetics are formulated, using different cosmetic ingredients to form the base in which one or more herbal ingredients are used to cure various skin ailments. Plants are highly used for development of new drug products for cosmeceuticals and pharmaceutical applications.

Herbal Cosmetics, referred as Products, are formulated, using various permissible cosmetic ingredients to form the base in which one or more herbal ingredients are used to provide defined cosmetic benefits only, shall be called as “Herbal Cosmetics”. Herbal medication products, also known as herbal medicines or phytotherapeutic products, refer to medicinal products derived from plants or plant materials. These products utilize the therapeutic properties of various plant species, including their leaves, flowers, roots, stems, or extracts, to promote health and treat or prevent diseases.

Advantages of Herbal Cream :

[1] They do not provoke allergic reaction and do not have negative side effects

- [2] They are easily incorporated with skin
- [3] When small quantity they are very effective as compared to synthetic cosmetic
- [4] Extract of plant decreases the bulk property of cosmetics and gives appropriate pharmacological effects.
- [5] Easily available and found in large variety and quality.
- [6] Easy to manufactures and cheap cost.

Disadvantages of Herbal Cream:

- Fig. 1. Herbal drugs have slower effects as compare to Allopathic dosage form. Also, it requires long term therapy.
- Fig. 2. They are difficult to hide taste and odour.
- Fig. 3. Most of the herbal drugs are not easily available.
- Fig. 4. Manufacturing process is time consuming and complicated.
- Fig. 5. No pharmacopoeia defines any specific procedure or ingredients to be used in any of herbal cosmetic.

Benefits of Herbal Creams:

- Treats pimples and acne
- Controls excess oil secretion
- Makes the skin softer and smoother
- Maintains pH balance of the skin
- Suitable for all skin types
- 100% cruelty-free
- Easily available
- Economical
- It enhances the energy level of the body
- Variety of phyto-constituents can be incorporated

Ideal Properties of Herbal Cream:

- It should liquefy at body temperature
- It should not normally be diluted
- Should give a cooling effect on the skin after external application
- Less greasy than ointment and easily spread on the skin
- The pH of the cold cream must be optimum from 4.6-6.0
- It should penetrate the epidermis (via natural process)
- Its viscosity should be low enough to permit easy spreading
- It should be non-toxic

Cosmetic Products Cosmetics are constituted mixtures of chemical compounds derived from either natural sources, or synthetically created ones. Cosmetics have various purposes. Those designed for personal care and skin care can be used to cleanse or protect the body or skin. Cosmetics designed to enhance or alter one's appearance (makeup) can be used to conceal blemishes, enhance one's natural features (such as the eyebrows and eyelashes), add color to a person's face, or change the appearance of the face entirely to resemble a different person, creature or object. Cosmetics can also be designed to add fragrance to the body (7).

Cosmetic skin products

Creams- A cream is a preparation usually for application to the skin. Creams for application to mucous membranes such as those of the rectum or vagina are also used.

Gel- These are homogeneous, semisolid preparations usually consisting of solutions or dispersion of one or more medicaments in suitable hydrophobic and hydrophilic bases.

Lotions-A lotion is a low- to medium-viscosity medicated or non- medicated topical preparation, intended for application to unbroken skin.

Cream Creams are semisolid dosage forms containing more than 20% water or volatile components and typically less than 50% hydrocarbons, waxes, or polyols as vehicles. They may also contain one or more drug substances dissolved or dispersed in a suitable cream base. This term has traditionally been applied to

semisolids that possess a relatively fluid consistency formulated as either water-in-oil (e.g., cold cream) or oil-in-water emulsions (8).

Types of Creams (On basis of functions)

- ✓ Cleansing creams
- ✓ Cold creams
- ✓ Massage creams
- ✓ Night creams
- ✓ Moisturizing creams
- ✓ Foundation creams
- ✓ Vanishing Creams
- ✓ Hand and body protective creams



Herbal Cosmetics

The high demand of herbal cosmetics is due to the high quality standards, ease in availabilities, lesser side effects and cost effective. Cosmetics are the products applying on the body. Face creams are used as cosmetic for softening and cleansing action. The Ayurvedic system of medicine was one of the most important systems that uses herbal plant and extract of their various parts for the treatment or management of various disease states. Aloe vera Synonyms-Aloe Barbadensis belong to family- Liliaceae, which having 300 species, Aloe vera is cactus like plant that grow readily in hot, dry climates, and Aloe vera cultivated in very large Quantities. Cosmetics and some medicinal products are made up from the mucilaginous tissue in the centre of aloe-vera leaf and called Aloe vera gel. Aloe vera gel contains no Antraquinone (10,12). Herbal Cream is a polyherbal formulation that comprises of the concentrates of different plant parts like Aloe barbadensis, Ocimum sanctum, Azadirachta indica and Curcuma longa, Cedro oil, Myristica fragrans, Olium rosae (Rose Oil).



❖ Why herbal cream?

- ❖ Natural Products: As the name suggests that herbal cosmetics are natural.
- ❖ Safe and effective to use: In comparison with other beauty products flooded in the market, natural cosmetics are safest to use and effective as well.
- ❖ Suitable for all skin types.

- Not tested on animals.
- No side effects.
- Wide selection
- Budget-Friendly.

II. LITERATURE REVIEW

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III. AIM AND OBJECTIVES

Aim:

The aim of present research work is to formulate natural face cream using Aloe vera, turmeric, green tea and neem leaves extract for moisturizing, antimicrobial, antioxidant, skin glowing and softening effect. The research work also includes evaluation of prepared face cream.

objective:

- 1. Moisturize and hydrate:** Provide long-lasting hydration to dry, dehydrated, or sensitive skin.
- 2. Improve skin texture:** Enhance skin texture, reducing the appearance of fine lines, wrinkles, and pores.
- 3. Protect and defend:** Protect the skin from environmental stressors, such as pollution, UV radiation, and extreme weather conditions.
- 4. Soften and smooth:** Soften and smooth the skin, reducing the appearance of rough patches and uneven skin tone.
- 5. Brighten and even:** Brighten and even out skin tone, reducing the appearance of hyperpigmentation and dark spots.
- 6. Anti-aging benefits:** Provide anti-aging benefits, such as reducing the appearance of fine lines, wrinkles, and age spots.
- 7. Skin type:** Consider the specific needs of different skin types (e.g., dry, oily, sensitive).
- 8. Ingredient selection:** Choose ingredients that are effective, safe, and suitable for the target skin type.
- 9. Product texture:** Achieve a desirable product texture that is comfortable and easy to apply.

IV. PLAN OF WORK

Literature Review



Searching Matter Having Potential To Prepare cosmetic preparation



Collection Of All Ingredients Required For The Preparation



Formulation Of herbal face cream Preparation



Evaluation of herbal face cream Preparation



Complication Of Data

↓
Future Scope
↓
Conclusion
↓
Summary
↓
Result
↓
Reference

V. MATERIALS AND METHODS

Materials: The following chemicals were used for the present project work shown in table 1

Table.1

Ingredient
Beeswax
White soft paraffin
Methyl Paraben
Glycerin
Zinc Oxide

Methodology

Identification and collection of herbs : For the present work Aloe vera, Curcuma longa ,blue pea (Asian pigeonwings). Green tea (Lipton) was procured from the local market of badnapur. Table 2. represent common name, botanical name and family of herbs.

Table.2

Sr.No	Common Name	Botanical Name	Family
1	Aloevera	<i>Aloe barbadensis miller</i>	<i>Asphodelaceae</i>
2	Blue pea flower	<i>Asian pigeonwings</i>	<i>Fabaceae</i>
3	Green Tea	<i>Camellia sinensis</i>	<i>Theaceae</i>
4	Haldi	<i>Curcuma Longa</i>	<i>Zingiberaceae</i>

Excipients and herbal ingredients with their roles

Sr.No	Ingredients	Roles
1	Aloe Vera gel	Anti-ageing, anti-inflammatory, moisturizer, reduce acne and pimples.
2	Tulsi	Antibacterial, adds glow to the face.
3	Neem	Promote wound healing, relieves skin dryness, itching and redness.
4	Bees wax	Emulsifying agent, stabilizer and gives thickness to the cream
5	Liquid paraffin	Lubricating agent
6	Borax	Alkaline agent which reacts with emulsifying agent to form soap

7	Methylparaben	Preservative
8	Rose oil	Fragrance

Morphological characteristics of leaves of all plants have been done using WHO guidelines .

Processing of herbs :

Blue pea flower and green tea leaves, Aloe vera leaves and rhizome of curcuma longa was air dried under shade and converted into powder form with help of mortar and pestle. The dried powder of all crude drug was packed in a air tight container.

Extraction of herbs:

Extraction of leaves of plants blue pea , curcuma longa, green tea, Aloevera has been done by using decoction method (3 hours). Hydroalcoholic solvent (Ethanol:Water = 1:1) was used for extraction .



a.



b.



c.

Fig. 3 Hydroalcoholic extract of (a) blue pea (b) Curcuma Longa

(c) Green tea (d) Aloe – vera

Formulation of cream base:

A simple cream base was prepared by using beeswax – borax for incorporation of extracts.

Incorporation of herbal extracts into cream base to formulate herbal face cream After few minutes oil phase was formed. Aloe vera extract, Green Tea extract and Haldi Extract , blue pea extract, Distilled water, white soft paraffin and glycerine, , zinc oxide , Sodium benzoate was taken in second beaker. Mixing all the ingredients by heating on a water bath, the aqueous phase formed. Oil phase was added into aqueous phase and continuous stirring was done until semisolid mass was formed.



Fig.4 Herbal cream

FORMULATION OF HERBAL CREAM BASE

The beeswax – borax simple cream base was prepared and herbal extract were added into it to formulate herbal face cream . Ingredient used in the formulation shown in table 7.

Table

INGREDIENTS	QUANTITY
Aloevera	3 ml
Blue pea	1g
Green Tea	1 ml
Curcuma Longa	1 ml
Beeswax	3.2g
White Soft Paraffin	9ml
Glycerin	1ml
Zinc Oxide	0.7g
Sodium Benzoate	0.1g

Morphological Characteristics Of Leaves :

Aloe Vera ,Curcuma Longa Rhizome, blue pea flower

Table 3: Morphology of Aloe- vera

Sr.no	Characters	Aloe barbadensis miller
1	Dimensions	60-100 height.
2	Color and condition	green to grey- greenin color.
3	Taste	Aromatic
4	Odor	Characterstic

- Thick pointed leaves that taper towards the tip

- Small spikes along the leaf edge
- Leaves grow mostly vertically with the outer leaves bending slightly
- New leaves grow from the center of the plant
- New leaves have greyish white spots while older leaves are spotless
- Leaf color is green with a greyish-blue dusting
- Sprouts yellow flowers .

Table 4: Morphology of Curcuma Longa rhizome

Sr.no	Characteristics	Curcuma longa linn.
1	Dimension	4-7cm long and 1-1.5cm wide
2	Color	Deep Yellow to orange
3	Taste	Aromatic and pungent
4	Odour	disticant
5	Composition	Mostly curcumin I curcumonoid
6	Shape	Pear shaped or oblong or cylindrical

Curcumin, demethoxycurcumin and bis-demethoxycurcumin are the major constituents of Curcuma longa L. A rapid, selective, efficient and reproducible HPLC method for the separation and identification of curcuminoids.

Table 5 :Blue pea flower

Sr.no	Characters	Asian pingonwings
1	Dimensions	30 – 450 cm hight

2	Color	Blue or white
3	Taste	Slightly earthy,grassy
4	Odor	No odour



Green Tea powder

Green tea smells grassy, light and fresh, while black tea smells earthy, floral and sweet. When steeped, excellent tea should be deeply aromatic and amplify the unique scents of the dry tea leaves. Taste: Great tea had a strong, recognizable taste and mouth feel .

EXTRACTIVE VALUE

The extractive value of hydroalcoholic extract of neem, curcuma longa, Aloe vera, green tea leaves are shown in table. 6

Table

Sr.no	Name of plant	Method of extraction
1	Blue pea	Maceration
2	Curcuma longa	Decoction

3	Aloe vera	Decoction
4	Green tea	Decoction

Evaluation of herbal cream

Formulated herbal creams was further evaluated for various physical parameters success colour, odour, consistency, and state of the formulation

a) **Colour:** The colour of the cream was observed by visual examination.

b) **Odour:** The odour of cream was observed by smell.

c) **State:** The state of cream was examined visually.

d) **Consistency:** The formulation was examined by rubbing cream on hand manually.

e) **pH:** pH of prepared herbal cream was measured by using digital ph meter. The solution of cream was prepared by using 100 ml of Distilled water and set aside . pH was determined in three times for solution and the average value was calculated.

f) **Washability:** Formulation was applied on the skin and then ease extends of washing with water was checked.

VI. RESULT

a) **Colour:** The colour of the cream observed was yellow.

b) **Odour:** The odour of cream was characteristic.

c) **State:** The state was cream was semi-solid in nature.

d) **pH:** According to the results, the pH of all the formulation was found to be 6.4 – 6.8

Sr.no	Formulation	pH
1	Herbal face cream	6.5

Washability: test was carried out by applying a small amount of cream on the hand and then washing it with tap water. All three formulations were easily washable.

Sr.no	Formulation	Washability
1	Herbal face cream	Easily Washable

VII. CONCLUSION

The herbal face cream was prepared successfully and evaluated for various parameters. The colour, texture, odour, and consistency of the formulated cream was found to be excellent. All the observe parameters showed that the formulated cream was good and effective for moisturizing and skin nourishment.

Sr.no	Parameters	Results
1	Colour	Yellow
2	Odour	Characterstic
3	State	Semi – Solid
4	Consistency	Smooth
5	pH	6.5
6	Washability	Easy –Washable

VIII. EXPECTED OUTCOME

Formulation and Evaluation of Herbal Face Cream

1. Successful Formulation of Herbal Face Cream

The herbal face cream is expected to be successfully formulated using selected herbal extracts and suitable excipients. The final product should possess a smooth texture, uniform consistency, pleasant fragrance, and attractive appearance. The cream should remain free from phase separation, grittiness, and microbial contamination, ensuring product quality and user acceptability.

2. Good Physicochemical Characteristics

The formulated cream is expected to exhibit satisfactory physicochemical properties:

pH: Approximately 5.5–7.0, matching the natural pH of the skin and minimizing irritation.

Viscosity: Appropriate viscosity for easy application and retention on the skin surface.

Spreadability: Easy and uniform spreading over the skin without excessive rubbing.

Homogeneity: Uniform distribution of ingredients throughout the cream.

Washability: Easy removal from the skin using water.

Extrudability: Smooth and effortless extrusion from tubes or containers.

These properties are essential for ensuring patient comfort and product effectiveness.

3. Effective Moisturizing Activity

The herbal face cream is expected to provide long-lasting hydration by reducing moisture loss from the skin. Natural ingredients rich in oils, polysaccharides, and humectants may help maintain the skin's moisture balance. Regular application is expected to prevent dryness, roughness, and flaking while improving skin softness and suppleness.

4. Skin Nourishment and Rejuvenation

The herbal extracts incorporated into the cream are expected to provide vitamins, minerals, antioxidants, and other bioactive compounds that nourish the skin. These constituents may support skin cell regeneration and repair damaged tissues, leading to healthier and more radiant skin.

5. Antioxidant Activity

Many herbal ingredients contain flavonoids, polyphenols, and other antioxidant compounds. These substances are expected to neutralize free radicals generated by environmental pollutants and UV radiation. This antioxidant effect may help delay premature aging, reduce oxidative stress, and maintain youthful skin.

6. Anti-inflammatory and Soothing Effects

The herbal face cream is expected to reduce skin irritation, redness, itching, and inflammation. Bioactive compounds present in medicinal plants may soothe sensitive skin and promote skin comfort. This property may be particularly beneficial for individuals with mild skin irritation or environmental skin stress.

7. Antimicrobial Protection

The herbal extracts may exhibit antimicrobial activity against certain bacteria and fungi commonly associated with skin problems. This activity can help maintain skin hygiene and reduce the risk of minor skin infections, acne formation, and microbial contamination.

8. Improvement in Skin Texture and Appearance

Regular use of the cream is expected to improve skin texture by reducing dryness and roughness. The cream may enhance skin smoothness, softness, and elasticity, giving the skin a healthy, fresh, and glowing appearance.

9. Stability of the Formulation

The cream is expected to remain stable under different storage conditions throughout its shelf life. Stability studies should demonstrate:

No phase separation

No significant color change

No unpleasant odor development

Minimal pH variation

Consistent viscosity and texture

These findings will indicate the reliability and quality of the formulation.

10. Safety and User Acceptability

The herbal face cream is expected to be safe for topical use and should not cause irritation, allergic reactions, or discomfort. Due to the use of natural ingredients, the formulation may offer better skin compatibility and greater consumer acceptance compared to synthetic cosmetic products.

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